South Carolina Utility Demand-Side Management and System Overview 2007

A Report by the South Carolina Energy Office State Budget and Control Board



South Carolina Utility Demand-Side Management and System Overview 2007

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Executive Summary

Demand-side management (DSM) involves modifying energy use to maximize energy efficiency. In contrast to supply-side strategies, which increase energy supplies by, for example, building new power plants, DSM strives to get the most out of existing energy resources, thereby postponing the need for new power plants.

The South Carolina Energy Conservation and Efficiency Act of 1992 requires all utilities to report their demand-side activities. The relevant section of the S.C. Code of Laws can be found in Appendix A. The intent of the legislation was to encourage the implementation of additional DSM activities. The objective of this report is to summarize the DSM activities of those utilities that provided such information and to provide an overview of the basic peak system demand, total annual system usage, total miles of distribution line, number of customers, and power generation supplied from qualified facilities.

Thirty-one of the 46 electric utilities reported having active DSM programs in 2007: three investor-owned utilities, the state-owned Santee Cooper, seven municipal utilities and all twenty electric cooperatives. The programs that were reported by the large utilities this year are relatively unchanged from the last report, although Duke Energy has a proposal before the Public Service Commission which, if approved, will significantly increase their DSM activity. No gas utilities reported DSM activities.

According to data submitted by utilities, total annual system generation for retail consumption has increased by 25,870,943 MWh over the past five years. In 2007, there were 136,679 total miles of power distribution line. This is a two percent increase over the previous year. The number of retail electricity customers of utilities in South Carolina was 2,382,686 in 2007. While collectively the cooperatives account for 29.6 percent of South Carolina customers, SCE&G is the single utility that has historically had the largest electric power customer base, accounting for 26.8 percent of the total number of customers in 2007. Submitted data shows an annualized customer growth rate of about two percent over the past five years for all utilities.

During the years between 2002 and 2007, the total annual system consumption of natural gas in decatherms (DT) dropped from a high of 94 million DT in 2002 to a low of just over 90 million DT in 2007. Interestingly, the number of individual customers increased during this same period. In 2007, SCE&G accounted for 48.8 percent of the total natural gas sold to customers of reporting entities, followed by Piedmont Natural Gas Company with 24.5 percent.

Definition of Terms Used in This Report

Cogeneration systems produce electricity and process steam or heat from a single fuel source. These systems are put in place to reduce the amount of energy that large consumers use. See **Qualified Facilities** below.

Demand-side management (DSM) refers to the use of cost-effective conservation, efficiency, and load management programs that help to reduce the demand for and cost of energy services. Demand-side management is a resource option that complements power supply. It not only saves the customer money, but also helps the utility achieve less pollution and avoid more costly supply-side investments.

Decatherm (DT) is a unit of measurement of natural gas, equal to 1,000,000 BTUs or 293 kWh.

Kilowatt (kW) is a measure of real power, equal to 1,000 watts. A common equivalent is that 3/4 kW is equal to one horsepower. Higher quantities are expressed in megawatts (MW), equal to one million watts. A typical coal-fired electric plant produces about 300 MW.

Kilowatt-hour (kWh) is a unit of electrical measurement indicating the expenditure of 1,000 watts for one hour. Higher quantities are expressed in megawatt-hours (MWh), or the expenditure of one thousand kilowatts for one hour.

Load management shifts demand for power from periods of peak demand to periods of less demand. Although this process may more efficiently utilize generation and transmission systems and thus reduce the need for construction of generation and transmission facilities, it does not necessarily decrease the overall use of energy.

Qualified Facilities (QF) are defined by the Public Utilities Regulatory Policies Act of 1978 as: industrial cogeneration facilities and independent power producers using renewable fuel sources, including wood wastes and other biomass, incinerated municipal solid waste and small-scale hydro-electricity. These facilities are used to offset the amount of power that large users purchase from the utility and in some circumstances the facility may sell power to the utility grid.

Status of Utility Demand-Side Management Activities for 2007

Introduction

The South Carolina Energy Conservation and Efficiency Act of 1992 requires all utilities to report their demand-side activities. The relevant section of the S.C. Code of Laws can be found in Appendix A. The objective of this report is to summarize the Demand-Side Management (DSM) activities of those utilities that provided such information and to provide an overview of the basic peak system demand, total annual system usage, total miles of distribution line, number of customers, and power generation supplied from qualified facilities.

DSM is the process of managing the consumption of energy through the use of costeffective conservation, efficiency, and load management programs in order to reduce the demand for, and cost of, energy services. In contrast to "supply-side" strategies, which increase energy supplies (by building new power plants, for example), DSM strives to get the most out of existing energy resources, whether electric or gas. DSM involves utility consumers changing their energy use habits and using energy-efficient appliances, equipment, and buildings. DSM is a resource option that complements power supply. The goal of DSM is to reduce energy use and to smooth out the daily peaks and valleys in electric or gas energy demand to make the most efficient use of energy resources and to defer the need to develop new power plants. Additionally, cost savings to customers and reduction of pollution are indirectly achieved through DSM. Demand-side activities reshape energy use and demand, and provide an important component of the energy resource mix. DSM refers only to energy and load-shape modifying activities undertaken in response to utility-administered programs. It does not refer to energy and load-shape changes arising from the normal operation of the marketplace or from government-mandated energy-efficiency standards.

<u>Categories of Electricity Demand-Side Management Programs</u>

Conservation

Conservation programs are designed to entice consumers to use less electricity through changes in working and living habits, thereby reducing their need for electricity. Included in this category are public education and awareness programs that promote energy-reducing activities such as maintaining conservative thermostat settings, turning off appliances when not in use, and installing low-flow showerheads.

It is difficult to quantify the results of any one program, but many electric suppliers continue to conduct energy awareness advertising campaigns, demonstrations and seminars for various classes of customers.

Energy Efficiency

Energy efficiency programs reduce energy consumption by encouraging consumers to use energy more efficiently. There are many programs available, and each program is intended for a specific group of electricity users. Some of the targeted groups are newly built residences, existing residences, industry, commercial buildings, and agricultural users. These programs promote the use of more effective building insulation, high efficiency industrial equipment, appliances, air conditioning equipment and lighting. Incentives consist of more favorable rate schedules, cash rebates, low interest loans, and technical assistance.

Load Management

Demand-side activities in this category reduce the instantaneous demand for electricity by limiting or discouraging use during periods of high demand. For many reasons, it typically costs more to supply power during peak periods. For example, some older, less efficient plants are only used to meet peak hour demand. Furthermore, other newer facilities are also only brought online during peak times because they use more expensive fuel (e.g., natural gas). Therefore, transferring the use of energy to periods of lower demand allows the energy to be generated and distributed using more efficient, base-load generating plants. Typical load management activities include allowing direct, remote control of air conditioners and water heaters, interruptible rate schedules for large customers, thermal energy storage systems using off-peak power, and time-of-use rates.

Standby Generation Programs

Standby generation programs provide incentives for customers owning standby generators to utilize them during periods of high demand, thereby reducing the system peak demand. This is a generation displacement program similar to cogeneration, although this category is not a qualified source as defined by the Public Utilities Regulatory Policies Act (PURPA) of 1978. The requirements for these programs vary, but there is usually a payment from the electric company for the amount of capacity that is displaced by the generator as well as a fuel supplement payment based on kWh. Most suppliers require participants to have a minimum size generator as well as an agreement regarding its operation.

Voltage Reduction

Voltage reduction programs reduce the supplied voltage of electricity to all customers, usually between 2% and 5% percent. Lowering the supplied voltage has the overall effect of reducing the demand for electricity. There is some controversy concerning the effects of this practice, and as a result, it is used primarily as a last resort before interrupting the supply of electricity. Some municipalities employ this practice for reducing the load during critical periods, thereby reducing the peak demand and energy consumption for all customers in each sector.

Results and Findings of the 2007 Survey

The results and findings of the survey are reported in two sections: Electricity, beginning on this page, and Natural Gas, beginning on page 29.

ELECTRICITY RESULTS AND FINDINGS OVERVIEW

Data submittals were received from 42 of the 46 electric utilities operating in South Carolina. All four of the utilities that failed to report were municipal facilities and relatively small electricity suppliers. Central Electric Power Cooperative, Inc. submitted a report on behalf of all 20 distribution electric cooperatives. These cooperatives, as well as the one state-owned electric utility and all 4 investor-owned electric utilities, are fully represented in this report.

Thirty-one of the 46 electric utilities reported having active DSM programs: three investor-owned utilities, the state-owned Santee Cooper, seven municipal utilities and all twenty cooperatives. Annual peak demand reached 17,154 MW in 2007 while total demand was more than 82,544,000 MWh of electricity in 2007, for the reporting utilities.

Annual Peak System Demand

The 2007 survey requested the utilities to provide the total amount of retail energy demand in MW during the highest annual peak demand during the calendar year. Figure 1 indicates that South Carolina Electric and Gas (SCE&G) and Duke Energy accounted for the largest shares of peak demand with 27 percent and 28 percent, respectively. These figures represent a increase in percentage share for both providers since the 2006 report. This increase in share was met by a decrease of 3% by the Cooperative providers in the state over the same period of time.

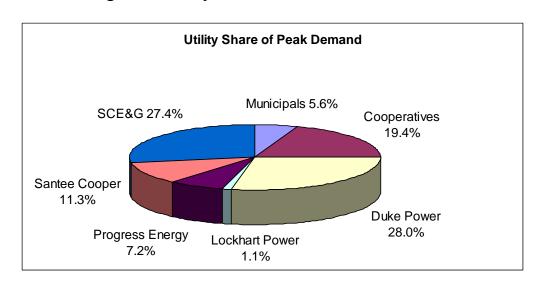


Figure 1. Utility Share of Annual Peak Demand*

*S.C. Total Peak System Demand in 2007= 17,154 MW Source: SCEO DSM survey.

Variation in Annual Peak System Demand

18,000.00
17,500.00
16,500.00
15,500.00
15,000.00
2003
2004
2005
2006
2007

Figure 2. Variation in Annual Peak System Demand

Source: SCEO DSM survey.

Total Annual System Consumption

A goal of demand-side activities is to increase efficiency by reducing the overall amount of energy used over time (as opposed to the peak demand amount used at a given instant). This energy is measured in megawatt hours (MWh) and is based on annual consumption. Whereas the lowering of peak demand decreases the need for additional power plants, reducing the amount of energy consumed conserves fuel resources and reduces harmful emissions into the atmosphere.

Figure 3 illustrates the total amount of annual generation in MWh that was used by retail customers during 2007. About 82,544,085 MWh of electricity were used in 2007 by customers of reporting utilities. Two investor-owned utilities, SCE&G (26.84%) and Duke Energy (26.68%), account for over half of total electricity consumption in South Carolina for this category.

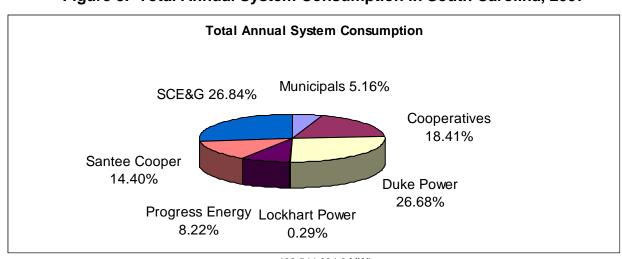


Figure 3. Total Annual System Consumption in South Carolina, 2007*

*82,544,084.6 MWh Source: SCEO DSM survey. According to data submitted by utilities, total annual system generation for retail consumption has increased by 25,870,943 MWh over the past five years.

Growth of Annual System Generation for Retail Consumption Fotal System Megawhatthours 90.00 80.00 70.00 60.00 50.00 40.00 30.00 20.00 10.00 0.00 2002 2003 2005 2004 2006 2007

Figure 4. Growth of Annual System Generation for Retail Consumption

Source: SCEO DSM survey.

Number of Customers

The number of retail electricity customers of utilities in South Carolina was 2,382,686 in 2007. While collectively the cooperatives account for 29.6 percent of South Carolina customers, SCE&G is the single utility that has historically had the largest electric power customer base, accounting for 26.8 percent of the total number of customers in 2007. Submitted data shows an annualized customer growth rate of about 2 percent over the past five years.

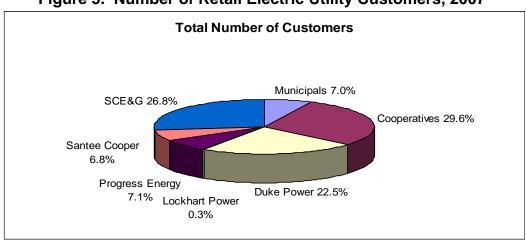


Figure 5. Number of Retail Electric Utility Customers, 2007*

*2.382.686 total retail customers Source: SCEO DSM survey.

Miles of Distribution Line

In 2007, there were 136,679 total miles of power distribution line. This is a 2.01 percent increase over the previous year. Interestingly, Figure 5 shows that the electric cooperatives are responsible for more than half of all distribution line in the state. The dramatic difference between customers and distribution line for the cooperatives is attributed to the fact that the cooperatives serve most of the rural areas of the state.

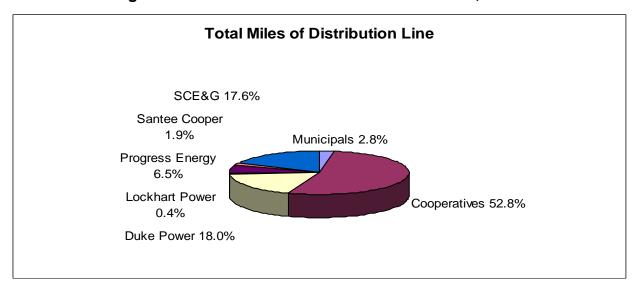


Figure 6. Total Miles of Power Distribution Line, 2007*

*136,679 miles of distribution line Source: SCEO DSM survey.

Qualified Facilities

The Public Utilities Regulatory Policies Act (PURPA) allows end users who need to generate power for their facilities to make any excess power available to the electric utilities supplying those users. PURPA also allows private companies to generate and to supply electricity to public utilities if that power is generated using approved energy resources. A qualified facility, as defined by PURPA, includes industrial cogeneration facilities and small scale independent power producers using PURPA approved fuel sources, including wood wastes, incinerated municipal solid waste, small-scale hydroelectricity and renewable sources. Qualified facilities reduce the need for new power plants just as load management does, by reducing the demand on utilities' systems at peak times. In South Carolina, there are 14 PURPA qualified facilities with the capacity to provide approximately 556 MW of power.

Electricity from qualified facilities is classified into two categories: 1) purchase, meaning that the utilities purchase the power generated; and 2) displace, meaning that the power is used by the facility itself, thus displacing power that would otherwise be drawn from the utility grid. Displacement from qualified facilities, in other words, is analogous to demand-side activities presented by some utilities in this report, in that it contributes to reducing overall system peak by utilities. Purchase is a direct, non-utility addition to total system use and peak capacity. As shown in Table 1, qualified facilities in South Carolina had the capacity to provide 556 MW of power in 2007.

The survey distributed by the SCEO requested the total generation of MWh supplied from qualified producers or avoided due to their operation. The Duke Energy system accounted for 41.7 percent of such generation in 2007, the SCE&G system for 36.7 percent, and the Progress Energy system for 21.4 percent.

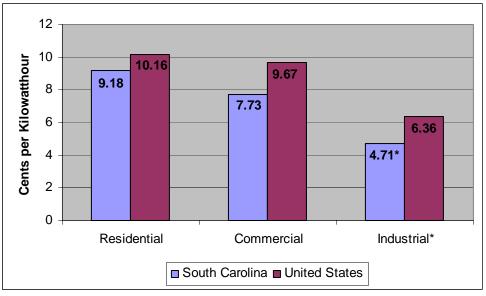
Table 1. Listing of Electricity Qualified Facilities, 2007

Utility	Plant Owner	Location	Fuel Type	Capacity (MW)	Purchase/ Displace
Progress Energy	Montenay Charleston RRI	Charleston	Solid Waste	13.000	Purchase/Displace
Progress Energy	Foster Wheeler	Charleston	Refuse	8.700	Purchase
Progress Energy	Stone Container	Florence	Wood Chips	68.000	Purchase
Progress Energy	Invista	Camden	Coal waste TOTAL=	30.000 119.700	Displace
Duke Energy	Aquenergy	Multiple	Hydro	8.700	Purchase
Duke Energy	Customer-self generation	Multiple	Multiple	105.000	Displace
Duke Energy	Bob Jones University	Greenville	Diesel	4.400	Displace
Duke Energy	Cherokee County	Gaffney	Gas	100.000	Purchase
Duke Energy	Converse Energy	Clifton	Hydro	1.250	Purchase
Duke Energy	Daniel Nelson Evans	Spartanburg	Hydro	.225	Purchase
Duke Energy	Northbrook Carolina Hydro	Multiple	Hydro	7.400	Purchase
Duke Energy	Pacolet River Power	Clifton	Hydro	.800	Purchase
Duke Energy	Pelzer Hydro Co.	Pelzer	Hydro TOTAL=	5.300 233.075	Purchase
SCE&G	International Paper	Eastover/Georgetown	Wood waste TOTAL=	205.200 205.200	Purchase/Displace
ΓΟΤΑL				557.975	

Supplemental Electricity Data

This section includes electric data research findings gathered from sources other than the reporting utilities. These figures are included to provide a better overall picture of the status of the electric industry in South Carolina.

Figure 7: U.S. and South Carolina Comparison of Electric Utility Average Price per kWh by Sector, 2007



Source: Energy Information Administration. *Electric Sales and Revenue Database File* *06 Data: 07 data not yet available

The tables on the following pages provide an overview of statistical information for South Carolina utilities. Specifically, Table 2 provides a profile of residential statistical information. Table 3 presents a statistical breakdown of electric utilities that provide power to the commercial sector, and Table 4 provides statistical information on the 34 utilities in South Carolina that provide power in the industrial sector in South Carolina.

Table 2. Class of Ownership, Number of Consumers, Revenue, Sales, and Average Retail Price for the Residential Sector, by Utility, 2006

Entity	Class of Ownership	Number of Consumers	Revenue (thousand dollars)	Sales (megawatt hours)	Average Retail Price (c/kWh)
Abbeville City of	Public	3,069	3,346	33,106	10.11
Aiken Electric Coop Inc	Cooperative	40,528	62,821	583,398	10.77
Bamberg Board of Public	Public	1,456	1,704	20,992	8.12
Berkeley Electric Coop Inc	Cooperative	66,284	107,194	1,133,270	9.46
Black River Electric Coop,	Cooperative	25,854	41,111	449,258	9.15
Blue Ridge Electric Coop	Cooperative	56,531	72,907	723,886	10.07
Broad River Electric Coop,	Cooperative	19,043	24,787	256,186	9.68
City of Bennettsville	Public	4,391	4,844	58,952	8.22
City of Camden	Public	9,500	8,682	104,465	8.31
City of Due West	Public	316	400	3,200	12.50
City of Gaffney	Public	5,980	5,860	69,292	8.46
City of Georgetown	Public	3,878	4,461	51,740	8.62
City of Laurens	Public	4,379	4,578	45,150	10.14
City of Newberry	Public	4,006	4,310	47,439	9.09
City of Orangeburg	Public	20,394	20,183	304,457	6.63
City of Rock Hill	Public	31,672	27,865	315,435	8.83
City of Seneca	Public	6,658	5,753	61,066	9.42
City of Union	Public	5,941	6,932	68,304	10.15
City of Westminster	Public	1,329	1,460	13,298	10.98
Clinton Combined Utility	Public	3,536	3,832	37,106	10.33
Coastal Electric Coop, Inc	Cooperative	10,267	16,543	152,224	10.87
Duke Energy Carolinas,	Investor	432,237	447,178	6,089,242	7.34
Easley Combined Utility	Public	11,367	13,966	148,814	9.38
Edisto Electric Coop, Inc	Cooperative	14,908	25,312	248,885	10.17
Fairfield Electric Coop, Inc	Cooperative	21,787	32,113	339,954	9.45
Greenwood	Public	11,150	8,604	114,993	7.48
Greer Commission of	Public	12,439	13,296	148,537	8.95
Haywood Electric Member	Cooperative	11	6	36	16.67
Horry Electric Coop Inc	Cooperative	52,107	78,653	779,187	10.09
Laurens Electric Coop, Inc	Cooperative	45,252	56,008	641,576	8.73
Little River Electric Coop	Cooperative	11,346	13,959	153,579	9.09
Lockhart Power Co	Investor	5,136	6,116	70,495	8.68
Lynches River Elec Coop,	Cooperative	19,327	26,577	252,574	10.52
Marlboro Electric Coop,	Cooperative	5,323	8,666	84,871	10.21
Mid-Carolina Electric Coop	Cooperative	41,223	62,989	666,094	9.46
Newberry Electric Coop,	Cooperative	11,407	15,157	157,633	9.62
Palmetto Electric Coop Inc	Cooperative	53,467	75,663	898,671	8.42
Pee Dee Electric Coop,	Cooperative	28,114	46,845	458,673	10.21
Progress Energy	Investor	137,959	190,302	2,112,581	9.01
Santee Electric Coop, Inc	Cooperative	40,853	63,969	633,197	10.10
South Carolina Electric &	Investor	526,429	749,485	7,598,169	9.86
South Carolina Pub Serv	Public	126,879	134,435	1,616,868	8.31
Town of McCormick	Public	887	1,038	11,201	9.27
Town of Prosperity	Public	638	561	7,344	7.64
Town of Winnsboro	Public	3,500	2,953	31,000	9.53
Tri-County Electric Coop,	Cooperative	17,143	28,339	247,559	11.45
York Electric Coop Inc	Cooperative	33,900	44,489	495,160	8.98

Table 3. Class of Ownership, Number of Consumers, Revenue, Sales, and Average Retail Price for the Commercial Sector in South Carolina, by Utility, 2006

Entity	Class of Ownership	Number of Consumers	Revenue (thousand dollars)	Sales (megawatt hours)	Av Retail Price (c/kWh)
Abbeville City of	Public	526	2,542	27,634	9.20
Aiken Electric Coop Inc	Cooperative	2,745	10,782	124,496	8.66
Bamberg Board of Public Works	Public	357	1,629	21,052	7.74
Berkeley Electric Coop Inc	Cooperative	7,658	18,548	201,499	9.21
Black River Electric Coop, Inc	Cooperative	3,765	9,773	100,054	9.77
Blue Ridge Electric Coop Inc	Cooperative	5,073	13,898	155,032	8.96
Broad River Electric Coop, Inc	Cooperative	652	2,525	27,139	9.30
City of Bennettsville	Public	540	3,523	37,693	9.35
City of Camden	Public	1,493	6,067	69,562	8.72
City of Due West	Public	30	402	8,959	4.49
City of Gaffney	Public	1,224	8,790	95,197	9.23
City of Georgetown	Public	1,197	8,108	81,928	9.90
City of Laurens	Public	844	4,442	55,656	7.98
City of Newberry	Public	854	5,579	65,982	8.46
City of Orangeburg	Public	3,424	7,248	100,588	7.21
City of Rock Hill	Public	3,268	31,039	362,583	8.56
City of Seneca	Public	1,038	6,752	71,059	9.50
City of Union	Public	1,116	5,294	56.242	9.41
City of Westminster	Public	238	1,212	11,337	10.69
Clinton Combined Utility Sys	Public	613	4,154	44.754	9.28
Coastal Electric Coop, Inc	Cooperative	940	3,089	34,912	8.85
Duke Energy Carolinas, LLC	Investor Owned	84,661	349,864	5,551,117	6.30
Easley Combined Utility System	Public	1,649	12,955	133,408	9.71
Edisto Electric Coop, Inc	Cooperative	4,441	5,478	49,887	10.98
Fairfield Electric Coop, Inc	Cooperative	1,140	6,597	75,956	8.69
Greenwood Commissioners-Pub Wk	Public	2,453	4,447	56,862	7.82
Greer Commission of Public Wks	Public	3,851	10,572	138,259	7.65
Horry Electric Coop Inc	Cooperative	7.588	15.977	161,138	9.92
Laurens Electric Coop, Inc	Cooperative	4,385	14,448	176,419	8.19
Little River Electric Coop Inc	Cooperative	2,248	3,789	40,861	9.27
Lockhart Power Co	Investor Owned	1,200	1,877	19,783	9.49
Lynches River Elec Coop, Inc	Cooperative	881	4,078	40,625	10.04
Marlboro Electric Coop, Inc	Cooperative	1,203	3,803	37,035	10.27
Mid-Carolina Electric Coop Inc	Cooperative	5,736	19,928	222,764	8.95
Newberry Electric Coop, Inc	Cooperative	611	1,291	13,366	9.66
Palmetto Electric Coop Inc	Cooperative	9,368	42,125	516,400	8.16
Pee Dee Electric Coop, Inc	Cooperative	1,698	6,095	62,587	9.74
Progress Energy Carolinas Inc	Investor Owned	32,336	147,106	1,823,697	8.07
Santee Electric Coop, Inc	Cooperative	2,592	9,122	95,478	9.55
South Carolina Electric & Gas Co	Investor Owned	89,691	612,101	7,799,530	7.85
South Carolina Pub Serv Auth	Public	29,583	146,250	1,951,064	7.50
Town of McCormick	Public	197	646	6,728	9.60
Town of Prosperity	Public	116	293	3,799	7.71
Town of Winnsboro	Public	591	1,154	13,000	8.88
	Cooperative	486			9.98
Tri-County Electric Coop, Inc York Electric Coop Inc	Cooperative	3,228	5,278 10,410	52,870 126,519	9.98 8.23

Table 4. Class of Ownership, Number of Consumers, Revenue, Sales, and Average Retail Price for Industrial Sector in South Carolina, by Utility, 2006

Entity	Class of Ownership	Number of Consumers	Revenue (thousand dollars)	Sales (megawatt hours)	Average Retail Price (c/kWh)
Aiken Electric Coop Inc	Cooperative	14	9,504	177,150	5.36
Bamberg Board of Public Works	Public	5	470	7,628	6.16
Berkeley Electric Coop Inc	Cooperative	256	12,255	176,400	6.95
Black River Electric Coop, Inc	Cooperative	17	7,221	119,795	6.03
Blue Ridge Electric Coop Inc	Cooperative	22	5,928	96,229	6.16
Broad River Electric Coop, Inc	Cooperative	4	2,015	30,893	6.52
City of Due West	Public	2	8	66	12.12
City of Gaffney	Public	24	2,021	42,250	4.78
City of Newberry	Public	12	4,501	68,841	6.54
City of Orangeburg	Public	389	27,636	524,660	5.27
City of Rock Hill	Public	10	4,194	54,832	7.65
City of Seneca	Public	4	1,521	23,258	6.54
City of Union	Public	14	701	8,325	8.42
Clinton Combined Utility Sys	Public	6	2,223	32,219	6.90
Duke Energy Carolinas, LLC	Investor Owned	1,807	406,303	10,045,290	4.04
Edisto Electric Coop, Inc	Cooperative	15	1,433	18,905	7.58
Fairfield Electric Coop, Inc	Cooperative	14	11,057	221,598	4.99
Greenwood Commissioners-Pub Wk	Public	172	7,187	128,688	5.58
Haywood Electric Member Corp	Cooperative	3	6	49	12.24
Horry Electric Coop Inc	Cooperative	9	2,644	36,121	7.32
Laurens Electric Coop, Inc	Cooperative	26	8,148	133,473	6.10
Lockhart Power Co	Investor Owned	10	6,247	123,707	5.05
Lynches River Elec Coop, Inc	Cooperative	10	3,750	57,940	6.47
Marlboro Electric Coop, Inc	Cooperative	7	30,026	655,392	4.58
Mid-Carolina Electric Coop Inc	Cooperative	5	1,621	28,919	5.61
Newberry Electric Coop, Inc	Cooperative	84	7,212	103,185	6.99
Palmetto Electric Coop Inc	Cooperative	9	2,473	37,006	6.68
Pee Dee Electric Coop, Inc	Cooperative	27	20,393	388,537	5.25
Progress Energy Carolinas Inc	Investor Owned	749	176,634	3,130,318	5.64
Santee Electric Coop, Inc	Cooperative	17	31,059	597,222	5.20
South Carolina Electric & Gas Co	Investor Owned	510	314,175	6,182,736	5.08
South Carolina Pub Serv Auth	Public	34	362,527	8,048,694	4.50
Town of Winnsboro	Public	51	2,643	36,493	7.24
Tri-County Electric Coop, Inc	Cooperative	94	285	2,423	11.76
York Electric Coop Inc	Cooperative	30	4,747	76,452	6.21

Demand-Side Management Activities, 2007

This section provides the DSM activities of the utilities which submitted such reports to the SCEO. Included are program activities from all twenty electric cooperatives, seven municipalities, three investor-owned utilities, and the state-owned utility, Santee Cooper. The following information was taken directly from the surveys submitted by the utility companies. To maintain the objectivity of this report, minimal changes were made to the content or length of the responses.

Cooperatives

All 20 cooperatives reported having DSM activities in place. The estimated annual reductions achieved for 2007 peak demand were close to 80 MW for all cooperatives combined.

Central Electric Power Cooperative, Inc., is happy to report on behalf of the twenty electric cooperative distribution companies in South Carolina, of their activities in 2007 regarding Demand Side Management, Energy Efficiency, and Renewable Resource development.

The electric cooperatives have a long history in the area of demand side management as we have had programs to reduce peak demands for water heating and air conditioning since the early 1980's. These programs have historically been designed, not to save energy, but to reduce peak demands thereby making better use of existing generating resources. The economic benefits are obvious and these programs have well over one hundred thousand participants throughout the cooperative system. While these programs have been in effect for many years, they are currently being re-evaluated to determine if additional efforts need to be made to expand the programs, and if so, by what extent. Changing system conditions and load shape determines how much programs like this can be implemented effectively. We feel that as system growth makes the need for new generation greater, any measures to minimize that need through demand side management only becomes more valuable. By utilizing new technology such as "smart metering" or automated meter reading these new methods of communicating with customers, or customer's individual appliances, enhances our opportunities to manage system load levels. We are working with our Members to make these opportunities bear fruit and by doing it in a manner to minimize or even eliminate inconveniences to customers.

In 2007 the Board of Central Electric Power Cooperative began an effort to evaluate and quantify the potential of renewable resources and energy efficiency in South Carolina. The cooperatives recognize the importance these issues have upon the supply and demand for electricity in South Carolina, and we are keenly aware of our obligations to our Member / Owners to supply their electric power needs in as cost-effective manner as possible while maintaining a reliable generation, transmission, and distribution system. Also a part of that mandate is our obligation to also provide those services in a manner as to minimize the impacts

upon the environment of those responsibilities. As a public recognition of that long-held belief, our Board of Directors made the following commitment:

ENERGY AND ENVIRONMENTAL COMMITMENT

Central is committed to meeting the needs of the Members, by maintaining and delivering a power supply which balances price, reliability, and environmental stewardship. Our actions will be guided by the following principles:

- a.) As part of our power supply, we will seek renewable resources which are environmentally responsible, which offset or reduce CO2 and other emissions, and which are economically reasonable to our Members.
- b.) We view conservations and energy efficiency as a resource equal to power generation, and we will offer conservation and energy efficiency programs designed to reduce the growth in demand and energy on our system.
- c.) We will encourage partnerships which promote research to limit emissions from power generation, encourage conservation and enhance energy efficiency.

The first step in implementing this policy was to assess where we are today. To that end we commissioned two nationally known consultants, expert in the areas of renewable resource assessment, and energy conservation to perform two in-depth studies. The first study was to do an assessment of the potential for renewable resource development in South Carolina. What technologies are available, are they currently commercially viable, and are they technologically feasible given the conditions on the ground in South Carolina? Also, as a part of that study, what technologies are under development which might one day play a role? It is the position of the Cooperatives that all reasonably economic renewable resource technologies available to South Carolina should be developed. We do not expect that renewable resources will necessarily be available at a cost, at or below, the cost of traditional central station power. However, the Cooperatives are committed to renewable resource generation that is "reasonably economic".

The results of that study indicate that biomass technology has the greatest potential for development in South Carolina today both in terms of absolute technical potential and reasonably economic potential. The cooperatives are working with several individuals and companies to bring biomass generation to the marketplace. While biomass has the potential to bring the greatest benefit at the lowest potential cost, there are opportunities in wind, solar, and small scale hydropower, that also have development potential and we are committed to those technologies as well.

As a part of renewable resource development, we have not forgotten the potential for the development of renewable resources at the customer level. Many people have an interest in renewable resource development at their home or place of business. To facilitate this market for our customers, the cooperatives have developed a Net Metering Pilot Program. The cooperative will purchase from customers any energy generated by the customer beyond his own need at a

price reflective of the value of that power to the generating system. Distributed generation as it is sometimes called has benefits to the customer and to the transmission system as well. This pilot program is designed to facilitate integration of distributed generation onto the system by standardizing interconnection standards and by providing a "buy / sell" rate methodology fair to all parties.

While alternative generation technologies will help, perhaps the best kilowatt-hour produced is actually the one saved. The second study the Cooperatives commissioned dealt with energy conservation and energy efficiency. Reducing energy use is just effective as building power plants in terms of meeting need, and in many cases may be less costly. The study shows in fact, that energy efficiency has a much greater potential impact in meeting energy needs in South Carolina than do alternative or renewable energy resources. Our analysis shows that energy efficiency will be the fastest, most economical, and customer friendly way to meet our goals.

While the renewable resources assessment focused on South Carolina as a state, the energy conservation and energy efficiency study looked at the customer base of the electric cooperatives specifically. The cooperatives serve a much different customer base than do the investor-owned utility companies. These differences pose some unique challenges to us, but conversely, they also provide us with some unique opportunities. Our Board has directed us to develop energy efficiency programs designed specifically for our customer base to deliver the greatest amount of energy savings as possible at the lowest possible cost to customers. We will begin essentially to "pick the lowest hanging fruit first," and from those successes move forward. The work performed by our consultants essentially gave us a road map by which we can garner the greatest savings in the shortest period of time. No program can make our consumers, or anyone's consumers for that matter, accept and participate in a program unless it makes sense to them, and is affordable to them. We are in the process of designing several programs which will have an appeal to a wide range of consumers. By creating a wide range of programs we hope there will be something for everyone, and something that everyone can participate in.

Having a statement of commitment and developing programs is just a start however. In order to measure how effective we are, we have created an internal goal for meeting these challenges. We have committed to reducing our forecasted energy requirements over the next ten years by five percent. That reduction, while not sounding like a lot, is equivalent to the demand requirements of a base load generating facility. This goal will require a focused effort and a considerable financial commitment to make it happen. We have made that financial commitment and incorporated the anticipated savings into our future generation and transmission planning assumptions.

These are transformative times in the electric utility industry. As member-owned companies existing solely for the benefit of our customers, we are committed to bringing value to our customers and to our communities. The electric cooperatives have a role to play in this changing environment and we look forward to participating in moving South Carolina forward toward a cleaner, and more energy efficient tomorrow.

Municipalities

There were seven municipalities that reported the use of DSM programs in 2007.

City of Abbeville

The City of Abbeville continued to operate the "Power Partners" Program which is a demand side peak reduction program that is run by the City of Abbeville along with the Piedmont Municipal Power Agency (PMPA). The program has installed radio operated controllers to cycle air conditioners and electric hot water heaters off and on during peak electric load periods. The system is for peak reduction only and resulted in no reduction in energy (kWh) use but provided us a reduction of approximately 0..25 kW in demand during peak periods.

Gaffney Board of Public Works (BPW)

The BPW currently has approximately 9 MW of peak shaving capacity. This is in the form of seven Caterpillar diesel engine generator units placed at three BPW facilities. The units are operated in accordance with the BPW's wholesale energy supplier's (PMPA) call for load control. Typically this occurs during the months of June, July, and August. Roughly 90% of Gaffney's energy usage is CO_2 free.

City of Greer

The Greer Commission of Public Works demand side management practices include the operation of 2.5 MW of stand-by/peaking generation used during the peak demand periods on our system. We also accomplish another 1 MW of demand side management with the efforts of our wholesale power provider's, PMPA (Joint Action Agency), demand side management practices. In addition to this, the Commission is installing 3 MW of additional standby-generation capability that will be used during the demand peaks on our system.

City of Rock Hill

The City of Rock Hill reported having a Standby Generation Program with 15 facilities with 17 different generators in the system. These generators were all diesel-fired engines with a total capacity of 5780 kW.

Orangeburg Department of Public Utilities

The Orangeburg Department of Public Works has a Time-of-Use program in place that is tailored around irrigation systems.

City of Camden

The City of Camden, South Carolina Electric Department uses a radio based load management system to operate voltage reduction at their substations, two small generators, air conditioner switches, and water heater switches. The voltage reduction is 5% on most circuits, and 2% on a few longer feeders. The generators are for stand-by operation but are dispatched during peaks. The City has not offered new air conditioner or water heater switches in a few years and has discontinued giving credit for those installed. There are still a few in place that are dispatched when the radio signal is sent. Essentially, they have the ability to shed about 5% of their peak load.

The computer that dispatches the load management signal is nearing the end of its useful life and the City has purchased a SCADA system which they are presently installing

City of Newberry

The City of Newberry has Standby Generation capacity of 10MW that it uses to supply itself during annual peak hours thereby reducing wholesale demand purchases and cost.

Investor-Owned Utilities

There were three investor-owned utilities that reported having DSM activities.

Duke Energy Company

Current Energy Efficiency and Demand-Side Management Programs

Duke Energy Carolinas uses EE and DSM programs to help manage customer demand in an efficient, cost-effective manner. These programs can vary greatly in their dispatch characteristics, size and duration of load response, certainty of load response, and frequency of customer participation. In general, programs include two primary categories: EE programs that reduce energy consumption (conservation programs) and DSM programs that reduce energy demand (demand response programs and certain rate structures).

<u>Demand Response – Load Control Curtailment Programs</u>

These programs can be dispatched by the utility and have the highest level of certainty. Once a customer agrees to participate in a demand response load control curtailment program, the Company controls the timing, frequency, and nature of the load response. Duke Energy Carolinas' current load control curtailment programs include:

Residential Air Conditioning Direct Load Control

Participants receive billing credits during the billing months of July through October in exchange for allowing Duke Energy Carolinas the right to interrupt electric service to their central air conditioning systems.

Residential Water Heating Direct Load Control

Participants receive billing credits for each billing month in exchange for allowing Duke Energy Carolinas the right to interrupt electric service to their water heaters. Water heating load control was closed in 1993 to new customers in North Carolina and South Carolina.

Demand Response – Interruptible and Related Rate Structures

These programs rely either on the customer's ability to respond to a utility-initiated signal requesting curtailment or on rates with price signals that provide an economic incentive to reduce or shift load. Timing, frequency and nature of the load response depend on customers' voluntary actions. Duke Energy Carolinas' current interruptible and time of use curtailment programs include:

- Programs using utility-requested curtailment signal
- o Interruptible Power Service

- o Standby Generator Control
- Rates using price signals
- o Residential Time-of-Use (including a Residential Water Heating rate)
- o General Service and Industrial Optional Time-of-Use rates
- o Hourly Pricing for Incremental Load

On September 1, 2006, firm wholesale agreements became effective between Duke Energy Carolinas and three entities, Blue Ridge Electric Membership Cooperative, Piedmont Electric Membership Cooperative and Rutherford Electric Membership 25 Cooperative. These contracts added approximately 48 MW of demand response capability to Duke Energy Carolinas3.

Interruptible Power Service

Participants agree contractually to reduce their electrical loads to specified levels upon request by Duke Energy Carolinas. If customers fail to do so during an interruption, they receive a penalty for the increment of demand exceeding the specified level.

Standby Generator Control

Participants agree contractually to transfer electrical loads from the Duke Energy Carolinas source to their standby generators upon request by Duke Energy Carolinas. The generators in this program do not operate in parallel with the Duke Energy Carolinas system and therefore, cannot "backfeed" (i.e., export power) into the Duke Energy Carolinas system. Participating customers receive payments for capacity and/or energy, based on the amount of capacity and/or energy transferred to their generators

Residential Time-of-Use

This category of rates for residential customers incorporates differential seasonal and time-of-day pricing that encourages customers to shift electricity usage from on-peak time periods to off-peak periods. In addition, there is a Residential Water Heating rate for off-peak water heating electricity use.

General Service and Industrial Time-of-Use

This category of rates for general service and industrial customers incorporates differential seasonal and time-of-day pricing that encourages customers to use less electricity during onpeak time periods and more during off-peak periods.

Hourly Pricing for Incremental Load

This category of rates for general service and industrial customers incorporates prices that reflect Duke Energy Carolinas' estimation of hourly marginal costs. In addition, a portion of the customer's bill is calculated under their embedded-cost rate. Customers on this rate can choose to modify their usage depending on hourly prices.

Energy Efficiency Programs

These programs are typically non-dispatchable, conservation-oriented education or incentive programs. Energy and capacity savings are achieved by changing customer behavior or through the installation of more energy-efficient equipment or structures. All effects of these existing programs are reflected in the customer load forecast. Duke Energy Carolinas' existing conservation programs include:

- Residential Energy Star® rates for new construction
- Existing Residential Housing Program
- Special Needs Energy Products Loan Program
- Energy Efficiency Kits for Residential Customers
- Energy Efficiency Video for Residential Customers
- Large Business Customer Energy Efficiency Assessments
- Large Business Customer Energy Efficiency Tools

The Company currently has on file in both North and South Carolina requests to restructure the current regulatory approach for investing in EE and DSM programs and to significantly expand the EE and DSM program offerings to customers. The Company's proposals could significantly increase the level of EE and DSM program contributions to Duke Energy Carolinas' supply portfolio.

Energy Efficiency and Demand-Side Management Programs

The following demand response programs are designed to provide a source of interruptible capacity to Duke Energy Carolinas:

Conservation Programs

Residential Energy Star® Rates

This rate promotes the development of homes that are significantly more energy-efficient than a standard home. Homes are certified when they meet the standards set by the U.S. EPA and the U.S. Department of Energy (DOE). To earn the symbol, a home must be at least 30 percent more efficient than the national Model Energy Code for homes, or 15 percent more efficient than the state energy code, whichever is more rigorous. Independent third-party inspectors test the homes to ensure they meet the standards to receive the Energy Star® symbol. The independent home inspection is the responsibility of the homeowner or builder. Electric space heating and/or electric domestic water heating are not required.

Existing Residential Housing Program

This residential program encourages increased energy efficiency in existing residential structures. The program consists of loans for heat pumps, central air conditioning systems, and energy-efficiency measures such as insulation, HVAC tune-ups, duct sealant, etc.

Special Needs Energy Products Loan Program

This residential program encourages increased energy efficiency in existing residential structures for low-income customers. The program consists of loans for heat pumps, central air conditioning systems and energy-efficiency measures such as insulation, HVAC tune-ups, duct sealant, etc.

The Commission's May 22, 2006 Order Approving the Joint Recommendation of Duke Energy Carolinas, the Public Staff, and the Attorney General for Conservation and Energy

Efficiency Programs approved the programs and required Duke Energy Carolinas to file a status report as to the funding and implementation of the programs on or before July 2,

Green Initiative

Renewable Energy Initiatives

Palmetto Clean Energy (PaCE) is a statewide initiative approved by the PSC. The mission of PaCE is to encourage renewable generation development from resources such as sun, wind, hydro, and organic matter by enabling South Carolina electric consumers, businesses, and organizations to help offset the cost to produce green energy. Duke Energy Carolinas supports PaCE by facilitating voluntary customer contributions to the program.

Duke Energy Carolinas is in the initial stages of investigating offshore wind potential in the Carolinas. Efforts are underway to work with Clemson University and North Carolina State University to set meteorological towers for additional wind data at 50 meter heights. It is anticipated that this wind research will also be conducted with the input from several stakeholder groups in the Carolinas.

South Carolina Electric & Gas

The Demand-Side Management Programs at SCE&G can be divided into three major categories: Customer Information Programs, Energy Conservation Programs and Load Management Programs.

CUSTOMER INFORMATION PROGRAMS

SCE&G's customer information programs fall under two headings: the annual energy campaigns and the web-based information initiative. Following is a brief description of each.

1. The 2007 Energy Campaigns: In 2007 SCE&G continued to proactively educate its customers and create awareness of issues related to energy efficiency and conservation.

- Weatherline energy saving tips promoted on the Weatherline.
- Bill Inserts bill insert issued to targeted customers promoting the Low-Income Home Energy Assistance Program (LIHEAP).
- Brochures/Printed Materials energy saving tips available on various printed materials in business offices.
- News Releases distributed to print and broadcast media throughout SCE&G's service territory.
- Featured News Guests SCE&G energy experts conducted several interviews with the media regarding energy conservation and useful tips.
- Web site energy saving tips and other conservation information placed on the company's Web site. The address for the Web site was promoted in most of the communication channels mentioned above.

- Weatherization Project SCE&G partners targeted low-income homes in Florence, Myrtle Beach, Bluffton and Columbia for weatherization. SCE&G employees volunteer their time to assist the effort.
- Speakers Bureau Representatives from SCE&G talked to local organizations about energy conservation.
- Energy Awareness Month company used the month as an opportunity to send information to the media discussing energy costs and savings tips.
- Energy Wise Newsletter provides energy conservation information for all customer classifications. Direct mailed to more than 500,000 customers in November 2007.
- 2. WEB-Based Information and Services Programs: SCE&G has available a Web-based tool which allows customers to access their current and historical consumption data and compare their energy usage month-to-month and year-to-year, noting trends, temperature impact and spikes in their consumption. Feedback on this tool has been positive, with more than 97,000 visits received in 2007. The SCE&G Web site supports all communication efforts to promote energy savings tips. The "Manage Energy Use" section of the SCE&G Web site, which features an interactive bill estimator tool, video instruction on weatherization and other useful content, is currently averaging more than 9,000 visits per year. For business customers, online information includes: power quality technical assistance, conversion assistance, new construction information, expert energy assistance and more.

ENERGY CONSERVATION PROGRAMS

There are three energy conservation programs: the Value Visit Program, the Conservation Rate and our use of seasonal rate structures. A description of each follows:

1. Value Visit Program: The Value Visit Program is designed to assist residential electric customers who are considering an investment in upgrading their home's energy efficiency. We speak with the customer either by phone, through email or by visiting the customer's home and guide them in their purchase of energy related equipment and materials such as heating and cooling systems, duct insulation, attic insulation, storm windows, etc. Our representative explains the benefits of upgrading different areas of the home and what affect upgrading these areas will have on energy bills and comfort levels as well as informing the customer on the many rebates we offer for upgrading certain areas of the home (see rebate schedule below). We also offer financing for qualified customers which makes upgrading to a higher energy efficiency level even easier. There is a \$25 charge for the program, but this charge is reimbursed if the customer implements any suggested upgrade within 90 days of the visit. Information on this program is available on our website and by brochure.

0 to R30 attic insulation - \$6.00 per 100 sq. ft. R11 to R30 attic insulation - \$3.00 per 100 sq. ft. Storm windows - \$30.00 per house Duct insulation - \$60.00 per house Wall Insulation - \$80.00 per house

2. Rate 6 Energy Saver / Energy Conservation Program: The Rate 6 Energy Saver / Energy Conservation Program rewards homeowners and home builders who upgrade their

existing homes or build their new homes to a high level of energy efficiency with a reduced electric rate. This reduced rate, combined with a significant reduction in energy usage, provide for considerable savings for our customers. Participation in the program is very easy as the requirements are prescriptive and do not require a large monetary investment which is beneficial to all of our customers and trade allies. Homes built to this standard also have improved comfort levels and increased re-sale value over homes built to the minimum building code standards which are also a significant benefit to our customers. Information on this program is available on our website and by brochure.

3. Seasonal Rates: Many of our rates are designed with components that vary by season. Energy provided in the peak usage season is charged a premium to encourage conservation and efficient use.

LOAD MANAGEMENT PROGRAMS

SCE&G's load management programs have as their primary goal the reduction of the need for additional generating capacity. There are four load management programs: Standby Generator Program, Interruptible Load Program, Real Time Pricing Rate and the Time of Use Rates. A description of each follows:

- 1. Standby Generator Program: The Standby Generator I Program for retail customers was introduced in 1990 to serve as a load management tool. General guidelines authorize SCE&G to initiate a standby generator run request when reserve margins are stressed due to a temporary reduction in system generating capability or high customer demand. The Standby Generator II Program for retail customers was developed in 2000, authorizing standby generator runs both when reserve margins are stressed and when market prices are very high. Through consumption avoidance, customers who own generators release capacity back to SCE&G where it is then used to satisfy system demand. Qualifying customers (able to defer a minimum of 200 kW) receive financial credits determined initially by recording the customer's demand during a load test. Future demand credits are based on what the customer actually delivers when SCE&G requests them to run their generator(s). This program allows customers to reduce their monthly operating costs, as well as earn a return on their generating equipment investment. There is also a wholesale standby generator program that is similar to the retail programs.
- 2. Interruptible Load Program: SCE&G has over 200 megawatts of interruptible customer load under contract. Participating customers receive a discount on their demand charges for shedding load when SCE&G is short of capacity.
- 3. Real Time Pricing (RTP) Rate: A number of customers receive power under our real time pricing rate. During peak usage periods throughout the year when capacity is low in the market, the RTP program sends a high price signal to participating customers which encourages conservation and load shifting. Of course during low usage periods, prices are lower.

Time of Use Rates: Our time of use rates contain higher charges during the peak usage periods of the day and discounted charges during off-peak periods. This encourages customers to conserve energy during peak periods and to shift energy consumption to off-peak periods. All our customers have the option of a time of use rate.

Progress Energy Carolinas

Progress Energy Carolinas, Inc. (PEC) has a number of conservation and energy efficiency, load management, cogeneration, and renewable energy programs in effect. These include the following programs:

Energy Efficiency Programs

On Line Account Access

Energy analysis graphs allow customers to compare their electric usage in the current and previous year to the average temperature by month; compare past 12 months electric usage to the high, low and average temperature for the same period; and compare average monthly temperatures for the past 24 months. The energy analysis details allow customers to view their past 24 months of electric usage including date the bill was mailed; number of days in billing cycle; kWh (kilowatt hour) usage per month; daily kWh usage; average, low and high temperature for the month; click on a month and get daily temperature information for the month. These tools assist customers with understanding their energy usage patterns and identifying opportunities to reduce energy consumption. This program was initiated in 1999.

"Lower My Bill" Toolkit

This tool, implemented in 2004, provides on-line tips and specific steps to help customers determine actions to reduce energy consumption and lower utility bills. The suggestions range from relatively simple no-cost steps to more extensive actions involving insulation and heating and cooling equipment, as well as payment options.

Energy Saving Tips

PEC has been providing tips on how to reduce home energy costs since approximately 1981. This information is now available on-line. The site includes information on the typical biggest household energy wasters and how a few simple actions can increase efficiency. Topics include: Energy Efficient Heat Pumps, Mold, Insulation R-Values, Air Conditioning, Appliances and Pools, Attics and Roofing, Building/Additions, Ceiling Fans, Ducts, Fireplaces, Heating, Hot Water, Humidistats, Landscaping, Seasonal Tips, Solar Film, and Thermostats.

Home Energy Check (Mail-In)

PEC's Home Energy Check, implemented in 2002, is a comprehensive residential energy evaluation program designed to help customers identify the best ways to save energy in their home and find the resources to achieve those savings. The program provides customers with an analysis of energy consumption and recommendations on energy efficiency improvements. The Home Energy Check helps customers identify and evaluate cost-effective energy-saving measures for their homes.

Online Home Energy Check

This Web-based energy check, begun in 2002, enables customers to quickly answer common questions regarding energy usage and provides a full range of personalized recommendations for managing home energy costs. Customers receive specific recommendations for their household with detailed approaches for better managing energy use and saving money. The analysis also includes an automatic download of the customer's actual electric bill history.

Energy Efficient Home Program

PEC introduced in the early 1980's the Energy Efficient Home program. This program provides residential customers with a 5% discount of the energy and demand portions of their electricity bills when their homes met certain thermal efficiency standards that were significantly above the existing building codes and standards. Through December 2007, over 280,676 dwellings system wide qualify for the discount.

Currently, PEC utilizes the Energy Star standard for new applications for the energy conservation discount. Energy Star is the national symbol for energy efficiency. It is a partnership between the DOE, the U.S. Environmental Protection Agency (EPA), local utilities, product manufacturers, and retailers. Homes built with this label are at least 15% more efficient than the national Model Energy Code, have greater value, lower operating costs, increased durability, comfort, and safety. Features of an Energy Star Home include:

- Improved Insulation
- Advanced Windows
- Tightly-sealed Ducts
- High-Efficiency Heating and Cooling
- Reduced Air Infiltration

Homes that pass an Energy Star test receive a certificate as well as a 5% discount on energy and demand portions of their electric bills. Builders receive training in building energy efficient homes, and a means of differentiating their product on the market place.

Contractor Training

PEC began sponsoring training in 2000 for home builders on Energy Star® standards in order to promote more energy efficient building practices, and has provided this training to more than 2000 participants system wide since then. Energy Star® certified homes qualify for PEC's 5% energy conservation discount. PEC also sponsors training for heating, ventilation, and air conditioning (HVAC) contractors on sizing and proper installation of energy efficient HVAC systems. Properly sized and installed HVAC systems utilize less energy and provide increased home comfort.

Energy Efficiency Financing

PEC began offering energy efficiency financing with its "Home Energy Loan Program" in 1981. In 2002 PEC contracted with an outside vendor to provide financing with rates set by Fannie Mae. More than 500 loans system wide have been made since that time. This program connects customers with screened contractors who provide complete installation and financing on a range of energy-saving home improvements.

Energy Resource Center

In 2000, PEC began offering its large commercial, industrial and governmental customers a wide array of tools and resources to use in managing their energy usage and reducing their electrical demand and overall energy costs. Customers can see 24 months of actual bills inential to the mailied bills. Through its Energy Resource Center, located on the PEC Web site, PEC provides newsletters, online tools and information which cover energy efficiency topics such as:

- Electric chiller operation
- Lighting system efficiency
- Compressed air systems
- Motor management
- Variable speed drives
- How to conduct an energy audit

Also located on the Energy Resource Center website is PEC's Energy Profiler Online tool. Through this service, customers can analyze their electrical usage to gain an in-depth understanding of when and how they are using electrical energy. This detailed data is essential for identifying potential energy savings opportunities.

CIG Account Management

All PEC commercial, industrial, and governmental customers with an electrical demand greater than 200 kW (approximately 4800 customers) are assigned to a PEC Account Executive (AE). The AEs work hand-in-hand with their assigned customers to help them manage their energy usage and costs and to assist them in developing energy efficiency solutions. The AEs go onsite with the customer to better know and understand their customer's business operation and energy needs. The AEs personally assist customers in conducting an energy analysis of their facility and can bring in the resources of the Advanced Energy Corporation or the N.C. State Industrial Extension Service when a very detailed and in depth analysis of a specific energy system is required. The AEs provide informational and educational opportunities to help ensure the customers are aware of the latest energy improvement and system operational techniques.

Demand Response Programs

Time-of-Use Rates

PEC has offered voluntary Time-of-Use (TOU) rates to all customers since 1981. These rates provide incentives to customers to shift consumption of electricity to lower-cost off-peak periods and lower their electric bill.

Thermal Energy Storage Rates

EC began offering thermal energy storage rates in 1979. The present General Service (Thermal Energy Storage) rate schedule uses 2-period pricing with seasonal demand and energy rates applicable to thermal storage space conditioning equipment. Summer on-peak hours are noon to 8 p.m. and non-summer hours of 6 a.m. to 1 p.m. weekdays.

Real-Time Pricing

PEC's Large General Service (Experimental) Real Time Pricing tariff was implemented in 1998. This tariff uses a two-part real time pricing rate design with baseline load representative of

historic usage. Hourly rates are provided on the prior business day. A minimum of 1 MW load is required. This rate schedule is presently fully subscribed.

Curtailable Rates

PEC began offering its curtailable rate options in the late 1970s, and presently offers two tariffs whereby industrial and commercial customers receive discounts for PEC's ability to curtail system load during times of high energy costs and/or capacity constrained periods.

Voltage Control

This procedure involves reducing distribution voltage by up to 5% during periods of capacity constraints, representing a potential system reduction of 59 MW. This level of reduction does not adversely impact customer equipment or operations.

Renewables:

Palmetto Clean Energy (PaCE)

Palmetto Clean Energy (PaCE) is a statewide South Carolina effort to improve the environment by using "green power" electricity generated from renewable resources such as solar, wind, biomass and water. PaCE is administered by a nonprofit organization (Palmetto Clean Energy, Inc.) established by a consortium of investor-owned utilities (including PEC), the S.C. Energy Office, and the S.C. Office of Regulatory Staff. Patterned after NC GreenPower, PaCE was launched in February 2008.

PaCE allows residential and business customers to voluntarily fund green power purchases. Utility customers can choose to pay extra in their monthly bills, and 100 percent of these funds are passed on to PaCE to be used to subsidize the purchase of power from renewable sources. The program accepts financial contributions from citizens and businesses to help offset the cost to produce green energy. A typical contribution of \$4 per month adds one block of 100 kilowatthours of green energy to the electric grid.

Cogeneration:

Progress Energy Carolinas purchases electricity from thirty (30) cogenerators or small power producers in the two Carolinas. Twenty-three (23) of these utilize renewable resources to produce all or a part of the energy sold to PEC. These renewable resources include solar, biomass, hydro, wood, and refuse.

State-Owned Utility

Santee Cooper (South Carolina Public Service Authority)

1. Good Cents New and Improved Home Program

The Good Cents Program was developed to provide residential customers an incentive to build new homes to higher levels of energy efficiency and improve existing homes by upgrading heating and air conditioning equipment and the thermal envelope to high energy efficiency standards. All homes are evaluated to determine if they meet the standards set for the program. Inspections are completed during construction for new homes and at the completion of construction for new and improved homes.

Program participation in 2007 resulted in an estimated demand savings of 15,950 kW and estimated energy savings of 22,786,500 kWh. Total expenditures for the Good Cents Program incurred through Santee Cooper in 2007 were \$1,465,833.19. (Demand savings are based on summer peak demand reduction of 1.05 kW).

2. H_2O Advantage Water Heating Program

 H_2O Advantage is a storage water heating program designed to shift the demand related to water heating off-peak. This is accomplished with the installation of an electronic timer or radio controlled switch on an 80 gallon water heater. This program began in 1990 and was offered for the last time in 2000. The contract spans 10 years so this program will no longer be impacting the system after 2010.

Program participation in 2007 resulted in an estimated demand savings of 928 kW. Total expenditures for the H_2O Advantage Program incurred through Santee Cooper in 2007 for existing participants were \$84,848.27.

3. Commercial Good Cents

Commercial Good Cents is offered to commercial customers building new facilities that improve the efficiency in the building thermal envelope, heating and cooling equipment, and lighting. Commercial customers that meet program standards are given an up-front rebate to encourage participation in the program.

Program participation in 2007 resulted in an estimated demand savings of 20 kW and estimated energy savings of 32,251 kWh. Total expenditures for the Commercial Good Cents Program incurred through Santee Cooper in 2007 were \$7,171.

4. Thermal Storage Cooling Program

The Thermal Storage Cooling Program shifts energy used by commercial customers for air conditioning from peak to off-peak hours by utilizing thermal energy stored in a medium such as ice or water. Rebates are offered to customers who install this type of equipment. There is currently one active participant in this program and an estimated demand reduction of 203 kW.

As part of Santee Cooper's demand control program, currently there are approximately 500 MW of load taking service under interruptible and economy power schedules. This load is excluded from the peak demand calculations for generation planning and reserves resource planning.

South Carolina Public Service Authority ("Santee Cooper") Green Power Initiatives as of 12/31/2007

1. Green Power

Santee Cooper entered the arena of Green Power in 2001, being the first electric utility in South Carolina to offer electricity generated from renewable resources. Participation for 2007 was 2,173 participants purchasing 13,041 (100 kWh) blocks of energy.

2. Green Tags

Approval was given in September 2006 for the development of a new environmental program to offer to everyone in South Carolina, for the first time, the ability to purchase local renewable energy through a Green Tag program. This program allows all citizens and businesses in the state to do something positive to improve their environment, no matter their electric provider. Participation in 2007 was 117 Green Tag customers.

3. Renewables

In 2005, Santee Cooper announced a five-year, statewide and multi-tiered plan that would add solar projects at state universities and in various South Carolina regions, potential wind demonstration projects, and the continuation of landfills across South Carolina to the mix of renewables. In October 2006, Santee Cooper and Coastal Carolina University officially dedicated South Carolina's first solar Green Power site, a historic solar pavilion demonstration project that delivers on Santee Cooper's commitment to reinvest Green Power funds into future renewable energy projects in the state. Santee Cooper has also partnered with Clemson University to implement solar energy technology there.

Green Power Solar Schools was launched in 2006 at Hilton Head Middle School served by Palmetto Electric Cooperative. The program continues the Electric Cooperatives of South Carolina's and Santee Cooper's efforts to promote renewable energy, and fulfill Santee Cooper's commitment to reinvest Green Power funds back into renewable resources across South Carolina. The solar school installations will cross the state in phases, beginning with five pilot project schools in 2007.

Santee Cooper announced its fourth landfill site in Georgetown County in 2007, and began wind demonstrations in three locations as part of its renewable commitment.

4. Other

Santee Cooper's coal-fired power plants at Cross and Winyah generate a synthetic gypsum byproduct as a result of using scrubbing technology to reduce sulfur dioxide emissions. In

addition to generating renewable Green Power, Santee Cooper has a corporate recycling program that recycled more than 1 million tons of office waste and combustion byproducts in 2007, including nearly 90 percent of its fly ash and gypsum.

NATURAL GAS RESULTS AND FINDINGS

For purposes of the 2007 report, the survey requested annual decatherm (DT) peak system demand, total annual system DT sales, total miles of distribution line, and total numbers of customers. Fifteen out of sixteen natural gas utilities submitted their data for the survey, the one that did not report is a small municipal. According to survey data, during 2007 the annual peak system demand for reporting facilities was 597,515 DT, the total annual system use was 90 million DT, there were over 29,000 miles of distribution line, and 607,000 natural gas customers.

As discussed in the electricity section, the basic purpose of demand-side activities is to change energy-use decisions of customers in ways that are beneficial to both the customers and the utility itself. Whereas electric utilities must meet their load instantaneously, natural gas suppliers have the ability to store gas and use interruptible contracts to maintain reliability. There are two categories of demand-side activities for natural gas: conservation and load management programs.

Annual Peak System Demand

Of the 15 natural gas utilities submitting data, SCE&G had the highest annual peak system demand with 289,306 DT of the 596,594 DT in 2007. The output by SCE&G accounts for 48.5 percent of the 2007 peak demand of natural gas.

Table 5. Annual Peak System Demand (DT), 2007

	1
South Carolina Electric & Gas Company	289,306
Piedmont Natural Gas Company	156,053
York County Natural Gas Authority	44,031
Fort Hill Natural Gas Authority	37,391
Greer Commission of Public Works	20,254
Orangeburg Department of Public Utilities	13,379
City of Union	8,597
Chester County Natural Gas Authority	8,500
Laurens Commission of Public Works	5,849
Fountain Inn Natural Gas System	5,682
Winnsboro, Town of	3,329
Clinton-Newberry Natural Gas Authority	1,800
Bamberg Board of Public Works	1,279
Blacksburg, Town of	1,144
Bennettsville, City of	N/A*
Greenwood Commission of Public Works	N/A*
Total	596,594

*Did not report. Source: SCEO DSM survey.

Total Annual System Data and Customers

During the years between 2002 and 2007, the total annual system consumption of natural gas in DT dropped from a high of 97.5 million DT in 2002 to a low of just over 90 million DT in 2007. Interestingly, the number of individual customers increased during this same period. In 2007, SCE&G accounted for 48.8 percent of the total natural gas sold to customers as indicated by the reporting entities, followed by Piedmont Natural Gas Company with 24.5 percent. Figure 8 shows the total annual system demand over the past 5 years.

According to data submitted for the survey, the total number of natural gas customers for all classes (residential, commercial, and industrial) was 607,712, broken down in Table 10. This increase of 11.5 percent from 2002 to 2007occured even as system demand dropped. In 2007, SCE&G served 49.8 percent of all natural gas customers, and Piedmont Natural Gas Company accounted for 21.5 percent.

Table 6. Number of Customers. 2007

South Carolina Electric & Gas Company	302,584
Piedmont Natural Gas Company	130,840
York County Natural Gas Authority	51,500
Fort Hill Natural Gas Authority	37,512
Chester County Natural Gas Authority	18,000
Greer Commission of Public Works	17,852
Clinton-Newberry Natural Gas Authority	12,642
Orangeburg Department of Public Utilities	8,594
Laurens Commission of Public Works	7,145
City of Union	6,537
Fountain Inn Natural Gas System	6,109
Winnsboro, Town of	3,727
Bennettsville, City of	2,960
Bamberg Board of Public Works	1,154
Blacksburg, Town of	556
Greenwood Commission of Public Works	N/A*
Total	607,712

*Did not report. Source: SCEO DSM survey.

Total Annual System demand 95,000,000 94,000,000 93,000,000 92,000,000 91,000,000 90,000,000 89,000,000 88,000,000 87,000,000 2002 2003 2004 2005 2006 2007

Figure 8. Total Annual System Demand (Millions of Decatherms), 2002-2007

Source: SCEO DSM survey.

Total Distribution Lines

In 2007, there were 26,624 miles of distribution lines for natural gas in South Carolina. By far the largest owner of these lines was SCE&G with 57.9 percent of the total, or 15,405 miles of distribution lines. Table 7 shows the ownership of distribution lines by mileage, 2007.

Table 7. Miles of Natural Gas Distribution Lines, 2007

South Carolina Electric & Gas Company	15,406
Piedmont Natural Gas Company	3,440
Fort Hill Natural Gas Authority	2,821
York County Natural Gas Authority	1,442
Greer Commission of Public Works	683
Clinton-Newberry Natural Gas Authority	630
Chester County Natural Gas Authority	569
Laurens Commission of Public Works	382
City of Union	361
Orangeburg Department of Public Utilities	308
Fountain Inn Natural Gas System	247
Winnsboro, Town of	130
Bennettsville, City of	87
Bamberg Board of Public Works	81
Blacksburg, Town of	37

Greenwood Commission of Public Works	N/A*
Total	26,624

* Did not report. Source: SCEO DSM survey.

Supplemental Natural Gas Data

South Carolina has historically had higher prices than the national average for natural gas. In 2007, South Carolina had a residential price of \$22.07 per thousand cubic feet while the U.S. average was \$13.01 per thousand cubic feet. South Carolina natural gas prices have fallen by \$4.71 per thousand cubic feet from 2006 to 2007 in the residential sector, as compared to the U.S. fall of \$4.35, according to EIA.

Demand-Side Management Activities

None of the natural gas providers in the state reported programs that are intended to reduce demand. This is no different than recent years' reporting.

Appendices:

Appendix A: South Carolina State Statute Authorizing DSM Report

SECTION 58-37-30. Reports on demand-side activities of gas and electric utilities; forms.

- (A) The South Carolina Public Service Commission must report annually to the General Assembly on available data regarding the past, on-going, and projected status of demand-side activities and purchase of power from qualifying facilities, as defined in the Public Utilities Regulatory Policies Act of 1978, by electrical utilities and public utilities providing gas services subject to the jurisdiction of the Public Service Commission.
- (B) Electric Cooperatives providing resale or retail services, municipally-owned electric utilities, and the South Carolina Public Service Authority shall report annually to the State Energy Office on available data regarding the past, on-going, and projected status of demand-side activities and purchase of power from qualifying facilities. For electric cooperatives, submission to the State Energy Office of a report on demand-side activities in a format complying with then current Rural Electrification Administration regulations constitutes compliance with this subsection. An electric cooperative providing resale services may submit a report in conjunction with and on behalf of any electric cooperative which purchases electric power and energy from it. The State Energy Office must compile and submit this information annually to the General Assembly.
- (C) The State Energy Office may provide forms for the reports required by this section to the Public Service Commission and to electric cooperatives, municipally-owned electric utilities, and the South Carolina Public Service Authority. The office shall strive to minimize differing formats for reports, taking into account the reporting requirements of other state and federal agencies. For electrical utilities and public utilities providing gas services subject to the jurisdiction of the commission, the reporting form must be in a format acceptable to the commission.

Appendix B: 2007 Demand-Side Management Survey Cover Letter

STATE OF SOUTH CAROLINA State Budget and Control Board

SOUTH CAROLINA ENERGY OFFICE

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CHAIRMAN, WAYS AND MEANS COMMITTEE

HENRY J. WHITE
EXECUTIVE DIRECTOR

1201 MAIN STREET, SUITE 430 COLUMBIA, SOUTH CAROLINA 29201 (803) 737-8030 Toll-free 1-800-851-8899 Fax (803) 737-9846

Name, title Company Address: City state zip

I am writing to request information about ongoing and projected demand-side management activities that your utility conducts. We are requesting this information in accordance with South Carolina Code of Laws Section 58-37-10 which requires utilities to report demand-side management activities. A demand side activity is defined as "a program conducted by a producer, supplier, or distributor of energy for the reduction or more efficient use of energy requirements of the producer's, supplier's, or distributor's customers, including, but not limited to, conservation and energy efficiency, load management, cogeneration, and renewable energy technologies."

Information can be in a format of your choosing and may be in the form of a brief narrative description. Because of significant public interest in "green power," we also request a description of any green power initiatives underway or anticipated. Finally, please use the enclosed form to report basic quantitative information about your overall system.

Please return the completed descriptions and forms to the South Carolina Energy Office, Suite 430, 1201 Main St., Columbia, SC, 29201 no later than April 11, 2008. If you prefer, you may fax it to 803-737-9846 or email it to dowen.energy.sc.gov.

If you are interested in seeing our most recent compilation of this data, please visit www.energy.sc.gov. Click on "public information," and then "publications available on the web," and then "2006 DSM Report." We hope to make this reporting requirement as simple for you as possible, and welcome your suggestions for improvement.

If you have any questions, please contact me at 803-737-9822 or mperkins@energy.sc.gov.

Sincerely,

Mitchell M. Perkins

Director, State Energy Program

Enclosures

Appendix C: 2007 Demand-Side Management Survey for Electric Utilities

Electricity	I latte		
Overall System Data	Utility:		
Quantitative Data			
Please provide system summary totals for 12-month pe	eriods (on a calendar year		
basis) using actual			
annual values for each of the previous six calendar year	ars, January 2002		

tnrough May 2008.	Ī					
		ACTUAL				
Data Description	2002	2003	2004	2005	2006	2007
(1) Annual MW peak system demand, excluding sales for re-sale.						
(2) Total annual system MWh , excluding sales for resale.						
(3) Total miles of distribution line in service area (in miles).						
(4) Total number of customers (all classes).						
(5) Total generation (kWh) supplied from qualified facilities (IPP, cogeneration) or avoided due to their operation (NOTE: please attach a list showing the identity and generating capacity of each qualified producer in the system).						

Appendix D: 2007 Demand-Side Management Survey for Gas Utilities

Natural Gas	LIGHT.	
Overall System Data	Utility:	
Quantitative Data Please provide system summary totals for 12-month periods (or basis): *using actual annual values for each of the previous six calendar years, Janua through May 2008	·	

		ACTUAL				
Data Description	2002	2003	2004	2005	2006	2007
(1) Annual deca-therm (DT) peak system demand, excluding sales for re-sale.						
(2) Total annual system deca-therm (DT), excluding sales for re-sale.						
(3) Total miles of distribution line in service area (in miles).						
(4) Total number of customers (all classes).						

Appendix E: 2007 Demand-Side Management Survey Recipients

Respondents: Electric Utilities

Aiken Electric Cooperative Bamberg Board of Public Works Berkeley Electric Cooperative Bennettsville, City of Camden, City of Black River Electric Cooperative Blue Ridge Electric Cooperative Clinton, City of **Broad River Electric Cooperative** Due West, Town of Coastal Electric Cooperative Easley Combined Utility System Gaffney Board of Public Works Edisto Electric Cooperative Fairfield Electric Cooperative Greer Commission of Public Works Horry Electric Cooperative Laurens Commission of Public Works Laurens Electric Cooperative Newberry, City of Little River Electric Cooperative Orangeburg Department of Public Utilities Lynches River Electric Cooperative Prosperity, Town of Marlboro Electric Cooperative Seneca Light and Water Plant Mid-Carolina Electric Cooperative Union, City of Newberry Electric Cooperative Westminster Comm. of Public Works Palmetto Electric Cooperative Winnsboro, Town of Pee Dee Electric Cooperative **Duke Power Company** Santee Electric Cooperative **Lockhart Power Company** Tri-County Electric Cooperative Progress Energy (formerly CP&L) York Electric Cooperative South Carolina Electric & Gas Company Abbeville, City of Santee Cooper

Respondents: Natural Gas Utilities

Bamberg Board of Public Works
Bennettsville, City of
Blacksburg, Town of
Chester County Natural Gas Authority
Clinton-Newberry Natural Gas Authority
Fort Hill Natural Gas Authority
Fountain Inn Natural Gas System
Greer Commission of Public Works

Laurens Commission of Public Works

Orangeburg Department of Public Utilities
Piedmont Natural Gas Company
South Carolina Electric & Gas Company
Winnsboro, Town of
City of Union
York County Natural Gas Authority

Non-Respondents: Electric Utilities

Georgetown, City of	McCormick Commission of Public Works
Greenwood Commission of Public Works	Rock Hill, City of

Non-Respondents: Natural Gas Utilities

reenwood Commission of Public Works





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